



Integration of ELECTRICAL VEHICLE CHARGING SYSTEM (EVCS) to SEC LV and MV Distribution Network

*Inspection and Commissioning Checklist
for Bidirectional EVCS*

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1 SCOPE

The purpose of this document is to provide a generic form of checklist to be used during the inspection or the commissioning of a Bidirectional ELECTRICAL VEHICLE CHARGING SYSTEM (EVCS). This checklist has the purpose to inspect the presence of the necessary protection and equipment to safeguard the distribution network, this checklist doesn't intend to provide a detailed inspection of the charging stations.

It's worth highlighting that, at the time of the release of this document there are no international references yet developed that provide in detail what are the main components or elements to inspect and test in a Bidirectional ELECTRICAL VEHICLE CHARGING SYSTEM (EVCS), as a consequence, this document shall be maintained and updated frequently in particular after the development of international standards in commissioning of EV charging systems.

1.1 Notice to users

Users of this document are certified installers and SEC inspectors. The responsibility of SEC inspectors is to witness the correct installations of the Bidirectional ELECTRICAL VEHICLE CHARGING SYSTEM (EVCS) and ensure the presence of the minimum protection required to prevent any negative impact on the distribution network. The certified installers must be aware of the installing practices and commissioning procedures recommended by the manufacturer, the certified installer can belong to the manufacturer company or a trained third party that is trained to install ELECTRICAL VEHICLE CHARGING SYSTEM (EVCS) and is certified by the manufacturer.

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2 EVCS INSPECTION APPLICATION FORM

After the installation of the EVCS, the contractor shall apply for the inspection request online and upload all the needed data as per the below checklist.

Data name	Data type	Author	Notes
Site Test Upload and Request of Inspection			
Declaration of Conformity (letter of undertaking from Contractor) including: <ul style="list-style-type: none"> Clearance and Readiness for Energization of the proposed Exit Point and Equipment* A declaration that no changes to the initial design took place.* 	Upload files	Contractor	
2. Details of the protection arrangement and settings*	Upload files	Contractor	Overcurrent, Short-circuit, Interface Protection (only for bidirectional), and others as required
3. Copies of the Safety Rules and instructions, to declare that site is safe and ready for inspection*	Upload files	Contractor	Indicating safe working hours if applicable.
4. Electrical Diagram of the Consumer's Equipment at the POC*	Upload files	Contractor	Highlighting changes compared to the initial design if any
5. Proposed operation and maintenance manual according to manufacturer recommendations*	Upload files	Contractor	
6. Site test report including the relevant tests performed according to manufacturer recommendations.*	Upload files	Contractor	

After the upload of this information, SEC will have to check if all the needed documents are uploaded or not.

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3 ONSITE INSPECTION FORM

Below is the checklist that will be used by SEC for inspecting the bidirectional EVCS

Data name	Data type	Author	Notes
AC System - General			
The Main Switch is present*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
The Interface Switch is present (only for bidirectional)*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Interface protection (IP) is present (only for bidirectional)*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
The Backup interface device is present (only for bidirectional)*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
An UPS to support the Interface protection system is present (only for bidirectional)*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
EVCS number of installations is aligned with the design documents*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
EVCS's total power capacity is aligned with the design documents*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
The over-current protection is present*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
The RCD protection is present*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
All signs and labels inside the EVCS are in both Arabic and English*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
A communication system is available?	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
SIM card availability? If yes, SIM technology If yes, the SIM operator	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 4G <input type="checkbox"/> 5G <input type="checkbox"/> STC <input type="checkbox"/> Mobily <input type="checkbox"/> Zain
Emergency button?	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
Final Approval			
Is the Inspection approved?*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
Has the result been notified to the Consumer?	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the EVCS grant an energization approval? *	Selection	SEC	<input type="checkbox"/> Limited Operational Notification (for Bidirectional)

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Does SEC need to witness the commissioning test?*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
Name of the SEC Inspector	Alphabetic	SEC	
Notes from SEC Inspector	Alphabetic	SEC	

4 COMMISSIONING REPORT ONLY FOR BIDIRECTIONAL EVCS

The below checklist is reporting the main items that SEC will supervise during the commissioning phase, the contractor shall conduct all needed tests as per manufacturer instruction, however, SEC will focus only on the tests that would impact the distribution network e.g., the interface protection settings.

Data name	Data type	Author	Notes
EVCS System – (only for bidirectional)			
Expected date of energization*	Numeric	IFS	Automatically provided
Commissioning Test Report including:*	File	Consultant/ Contractor	Upload
- Test Report of the Interface Protection			
- Operational test			
- Power Quality test			
Responsible for the Commissioning and Subjects Involved			
Name of the Responsible	Alphabetic	Consultant/ Contractor	
Other Subjects Involved	Alphabetic	Consultant/ Contractor	Names and Roles

When SEC receives the contractor's commissioning report, the checklist below will be used to review the documents uploaded.

Data name	Data type	Author	Notes
EVCS System – General			
Expected date of energization	Numeric	IFS	Automatically provided
Interface Protection (only for bidirectional)			
The enabled functions of the Interface Protection those required by SEC?*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
The thresholds are those required by SEC*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
The times of intervention are those required by SEC*	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No

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<i>The interface device switches off in case of power failure on command of the Interface Protection*</i>	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>After a power recovery, the Interface Protection recloses the Interface device*</i>	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
Final Approval			
<i>Is the Consumer Commissioning Report approved?*</i>	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>Has the result been notified to the Consumer?*</i>	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>Does the EVCS grant "Final Operational Notification"??*</i>	Selection	SEC	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>Name of the SEC Inspector</i>	Alphabetic	SEC	
<i>Notes from SEC Inspector</i>	Alphabetic	SEC	If relevant